

U.S. DEPARTMENT OF
ENERGY

Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY

Overview of Vehicle Technologies Office Analysis

Rachael Nealer, PhD

VTO Analysis, Program Manager



Analysis Supports VTO Sub-programs

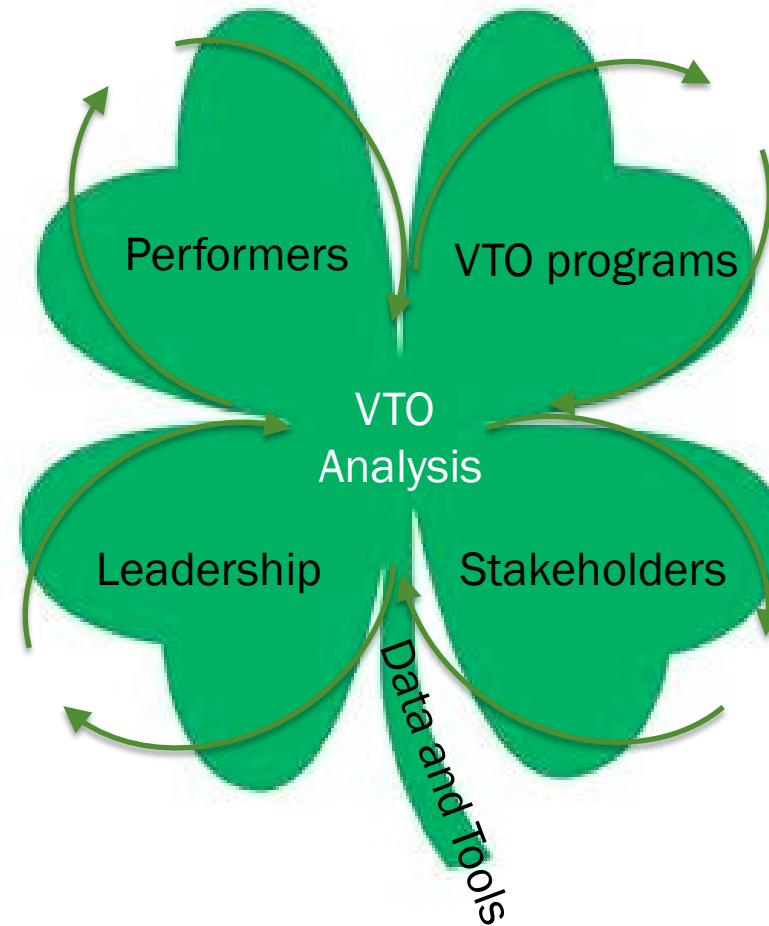


Component

Vehicle

Transportation System

Sneak Peak: The meat of the presentation



Why we're talking about transportation energy

Transportation is **29%** of total U.S. energy use



The average household spends **15%** of their income on transportation, **2nd** highest household expenditure

Every year, vehicles transport **11** billion tons of freight and people travel more than **3** trillion vehicle-miles

Source: Transportation Energy Data Book, 2018

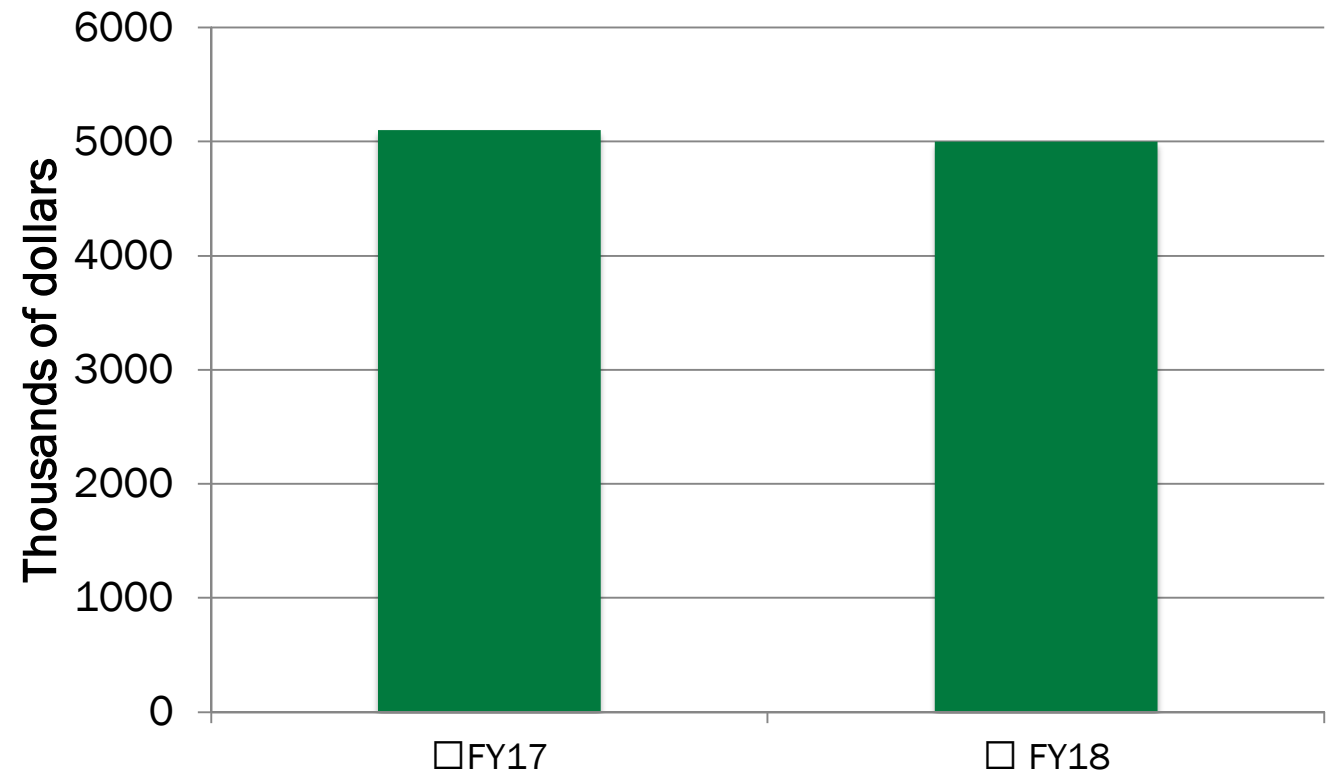
What we do with your taxes

mission

Develop and manage a portfolio of data-driven, advanced transportation technology analysis to answer critical questions and create insights about energy use and other relevant metrics.

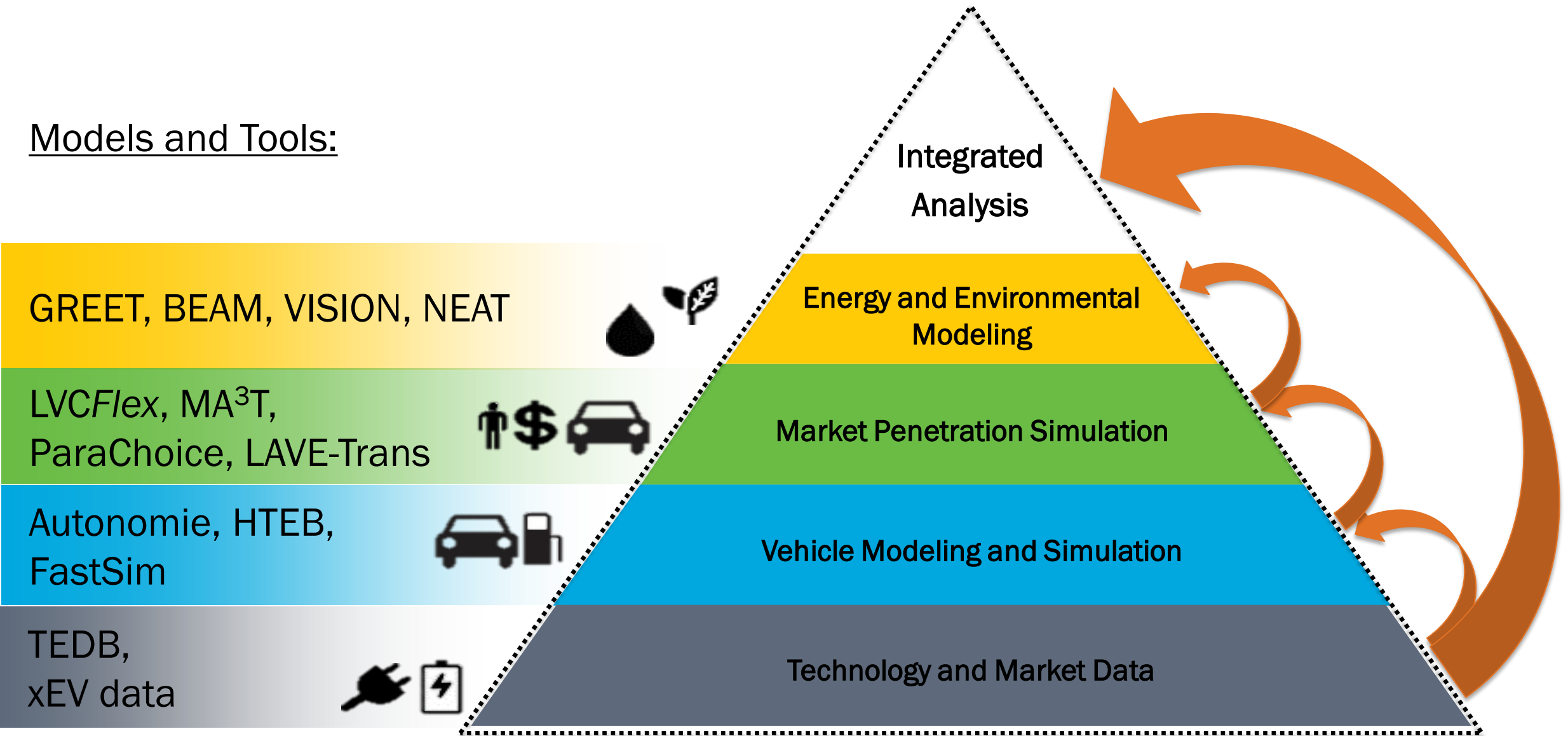
budget

- FY18 enacted budget although delayed with significant uncertainty, held constant at \$5M
- National Laboratory support from ANL, ORNL, LBNL, NREL, and Sandia

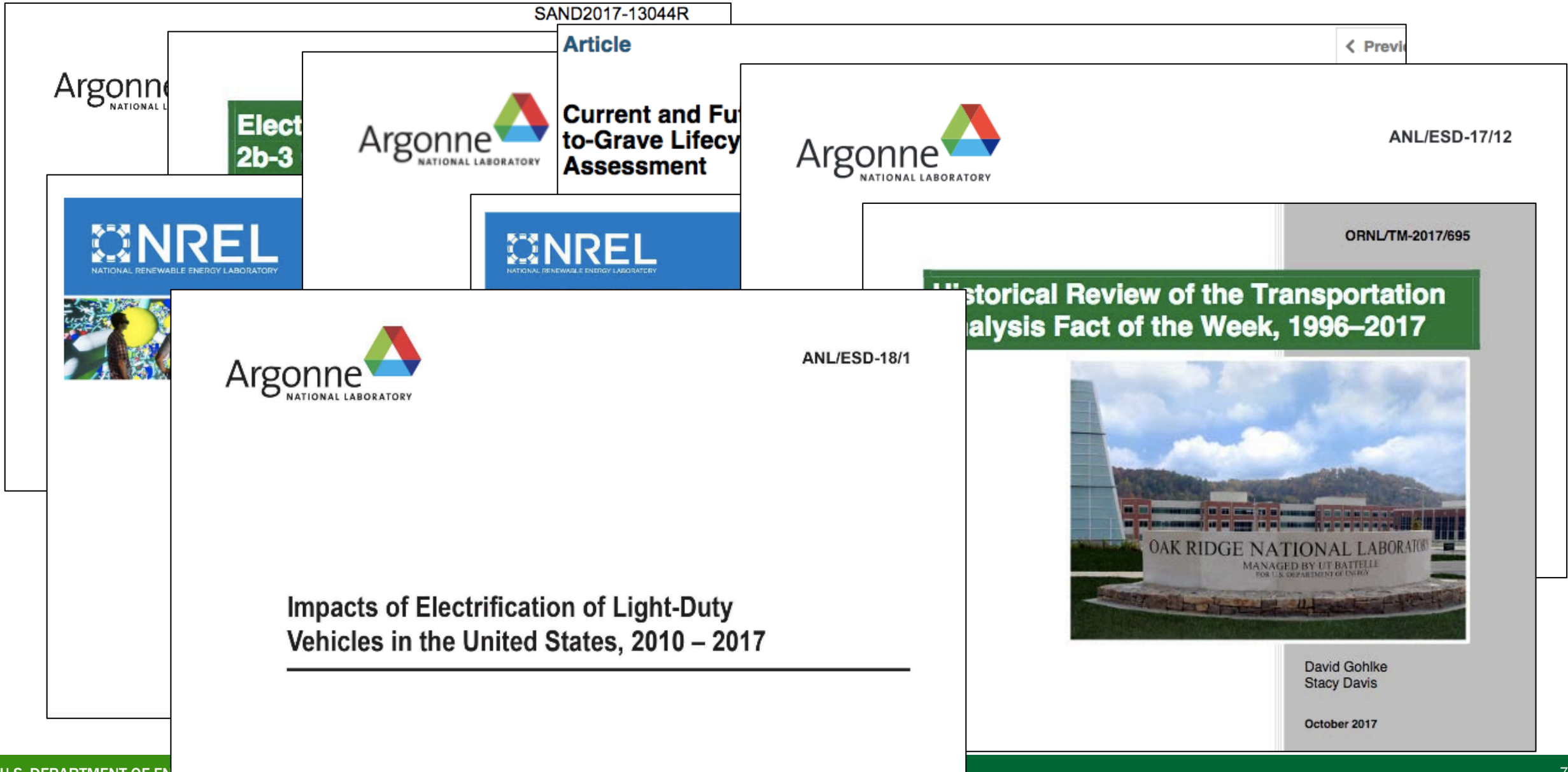


How we accomplish our analysis

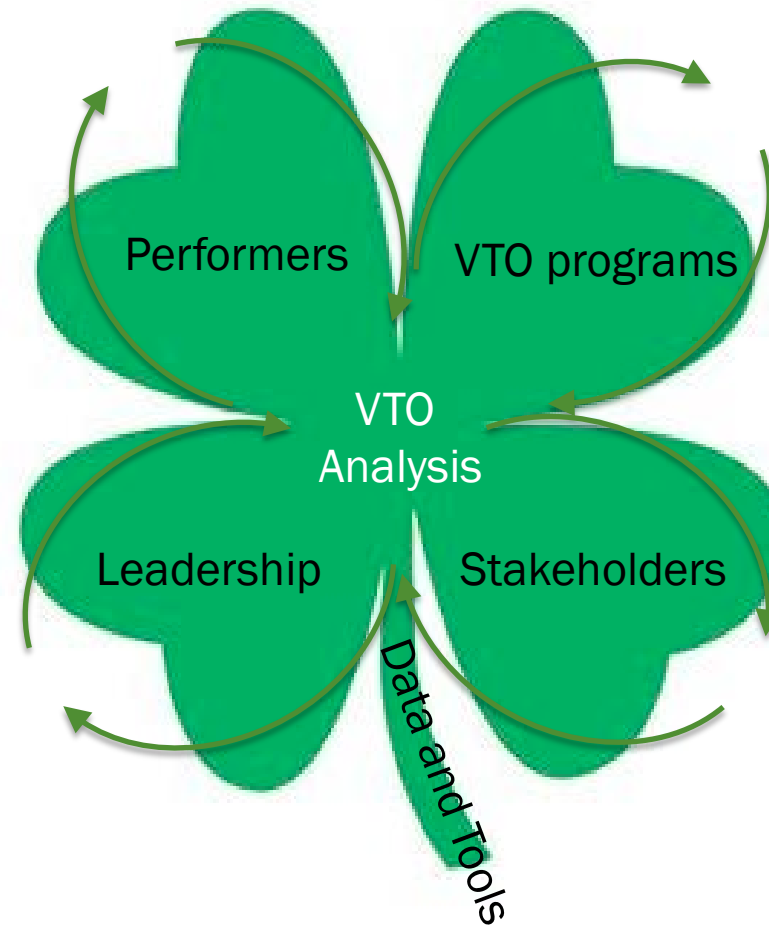
Models and Tools:



What we've accomplished in the last year



Purpose: Strengthen ties in transportation energy community



A Day in the Life of a VTO Analyst

What we think about when we're drinking coffee in the morning

Transportation Energy

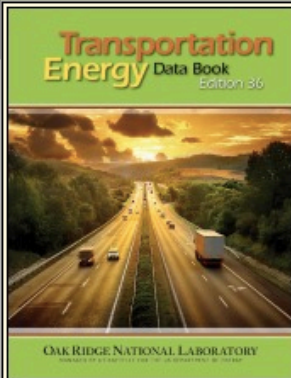


List of Chapters - Spreadsheets

[Quick Facts](#)

[Abstract](#)

1. Petroleum
2. Energy
3. All Highway Vehicles and Characteristics
4. Light Vehicles and Characteristics
5. Heavy Vehicles and Characteristics
6. Alternative Fuel and Advanced Technology Vehicles and Characteristics
7. Fleet Vehicles and Characteristics
8. Household Vehicles and Characteristics
9. Nonhighway Modes



[Download PDF](#)

To be notified annually when a new edition is released on-line, email DavisSC@ornl.gov.

Edition 36.1 Release

The *Transportation Energy Data Book* emphasizes energy. Designed in 1976 and has continued to be updated by the U.S. Department of Energy.

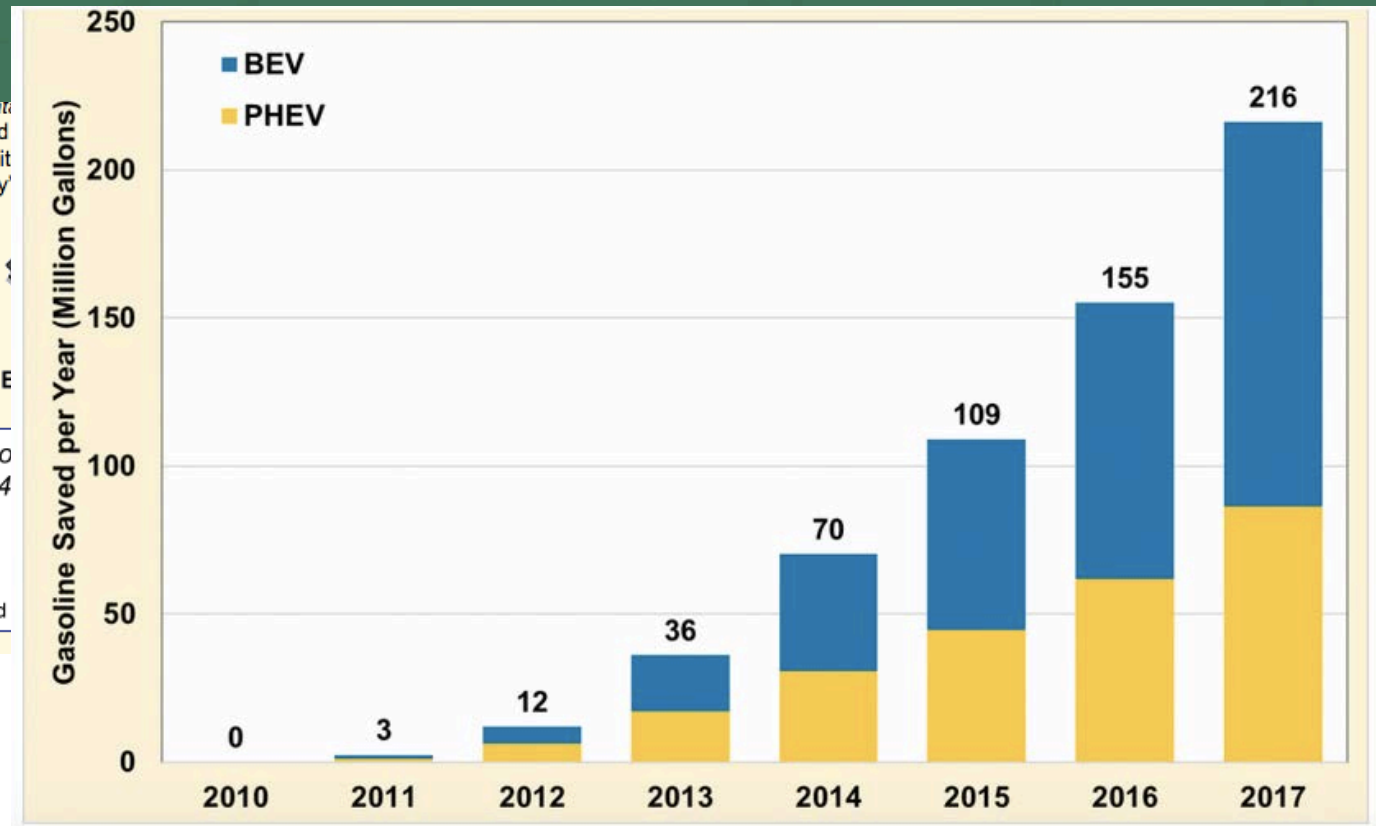


[Spreadsheets](#)

"The U.S. consumes the world's 95.4 percent of gasoline."

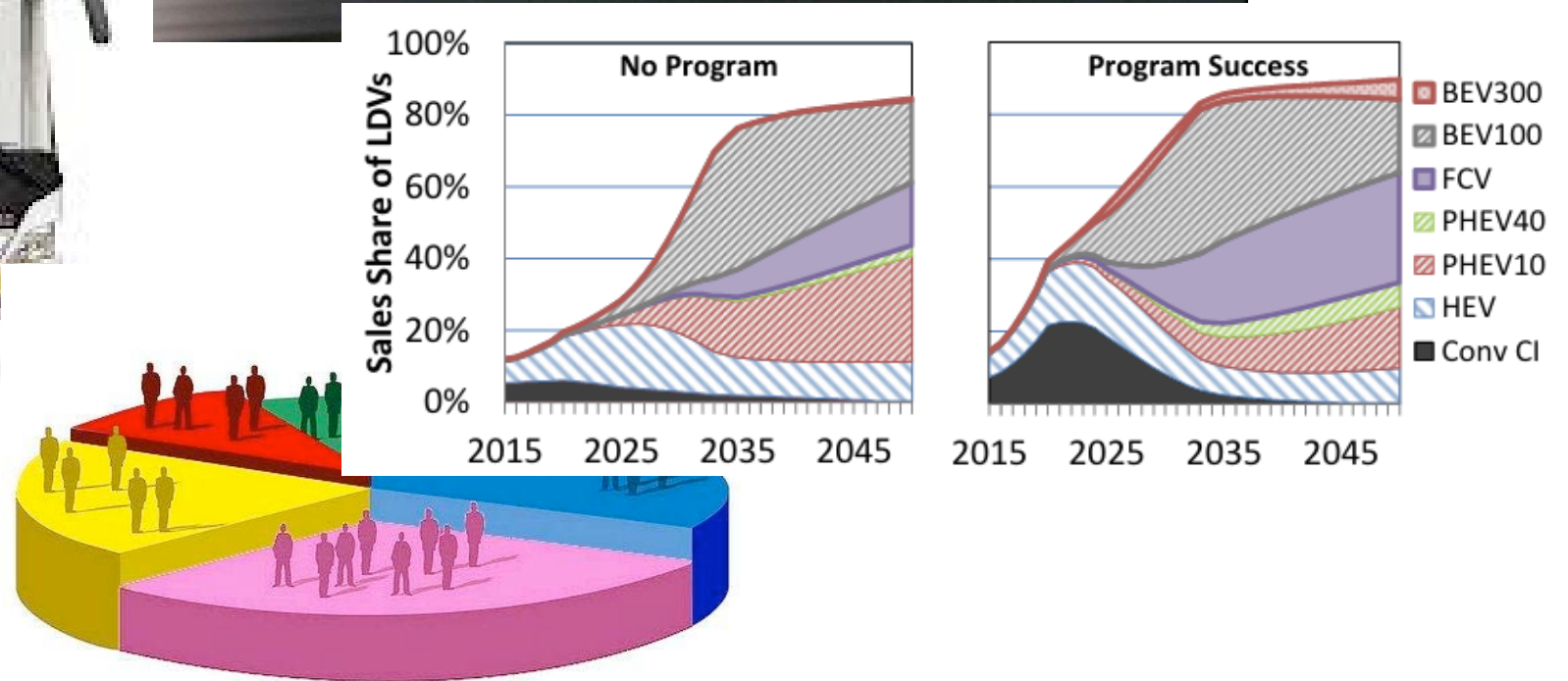
Table 1.4 World

FOTW #1029, May 14, 2018: Plug-in Vehicles Displaced 216 Million Gallons of Gasoline in 2017



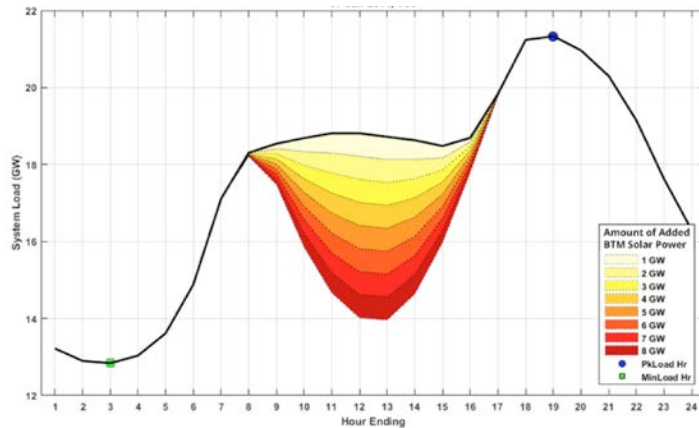
Who to talk to: Stacy Davis (ORNL) and Joann Zhou (ANL)

What we think about on the bus to work

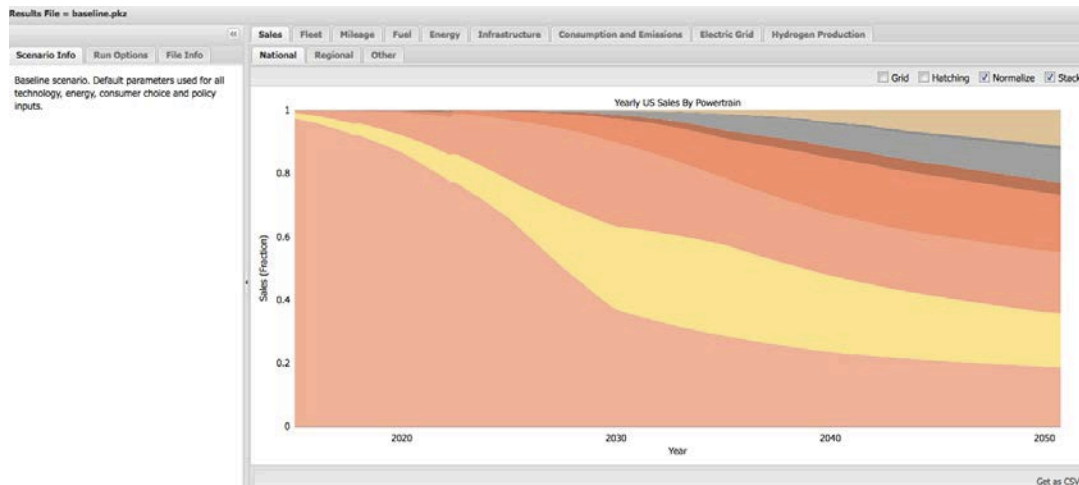


Who to talk to: Zhenhong Lin (ORNL) and Dave Gohlke (ANL)

What we think about in between meetings



Who to talk to: Colin Sheppard (LBNL)



Who to talk to: Becky Levinson and Brandon Heimer (SNL)

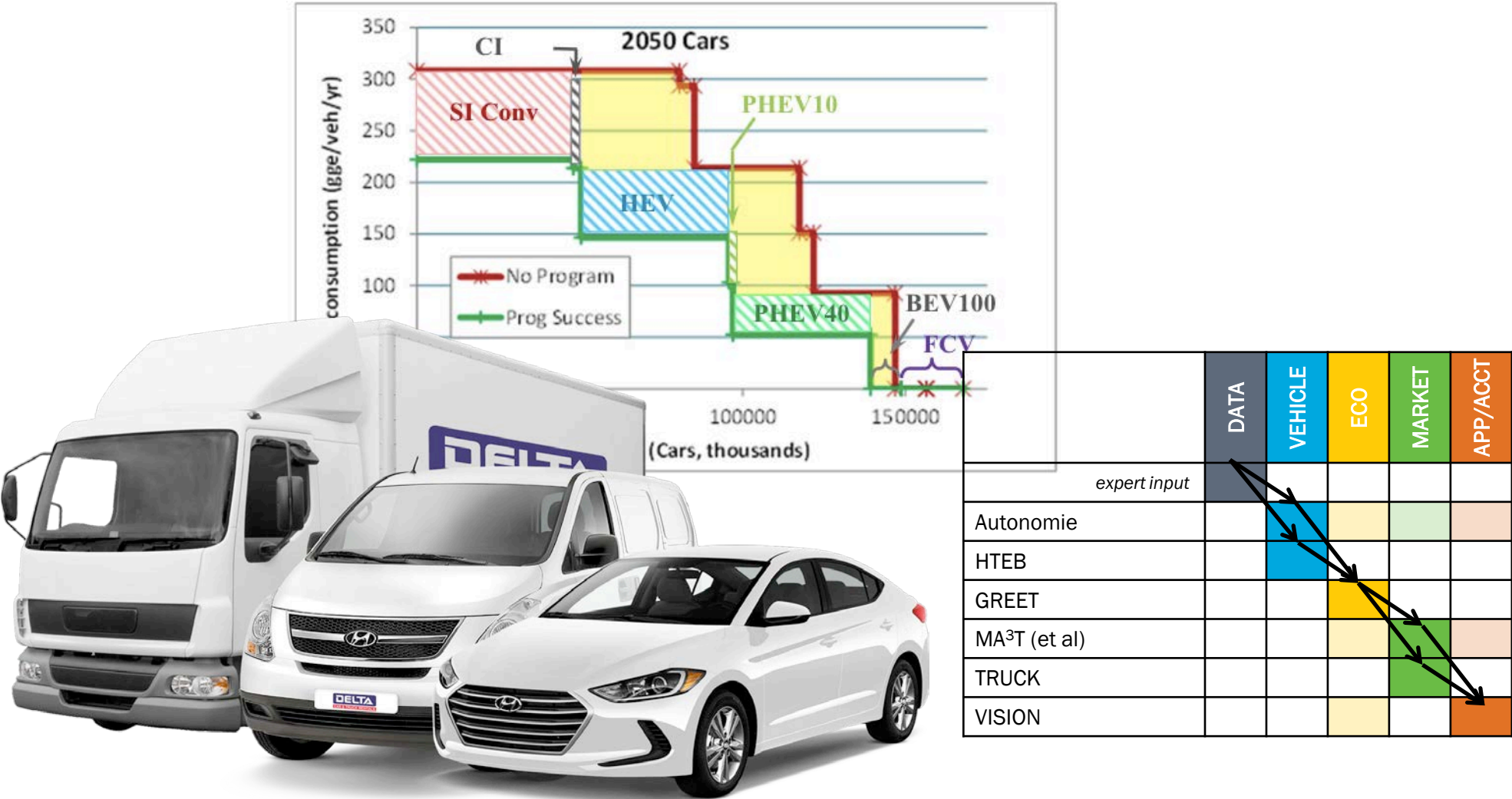
What we think about when we're picking up a snack



Barbecue		Cheddar		Jalapeno		Sour Cream + Onion		Specialty	
Barbecue	✓	Ruffles	→	Ruffles		Utz	→	Limon	→
Deep Fried	✓	Utz	→	Qp	→	Lays	→	Biscuit	→
Hot	→	Miss Vickies	→	Mix	→	Morkins	→	Crab	→
Dirty	→	Deep Fried	→	Jalapeno	→	Dirty	→	Buffalo	→
				Hot	→			Sriracha	→
				Hot	→			Sweet Maui	→
								Dill	→

Who to talk to: ME!

What we think about when we go to the gym



Who to talk to: Tom Stephens, Aymeric Rousseau, and Dave Gohlke (ANL)

What we think about when we walk the dog

The screenshot displays the Argonne National Laboratory Energy Systems website. The top navigation bar includes links for RESEARCH, FACILITIES, PUBLICATIONS, and NEWS. The main content area is divided into two columns. The left column features the GREET® Model section, which includes a list of publications and a list of major expansions. The right column features the VISION Model section, which includes a description of the model, a download form, and documentation links.

Energy Systems

Argonne NATIONAL LABORATORY

RESEARCH FACILITIES PUBLICATIONS NEWS

GREET® Model
The Greenhouse gases, I

GREET®

Publications

- [GREET.net Model](#)
- [Fuel-Cycle Model](#)
- [Vehicle-Cycle Model](#)
- [GREET WTW Calculator](#)
- [AFLEET Tool](#)
- [Fleet Footprint Calculator](#)
- [Travel Carbon Calculator](#)
- [Power Water Model](#)
- [Workshops](#)
- [Contact](#)

GREET News

GREET 2017 Release
The Argonne National Laboratory has released the suite of GREET n updates:

I. Major Expansions

- Added plastic-to-Fuel
- Added biomass-derived pathways from fast pyrolysis
- Added wood biomass
- Added new pathway for ethanol
- Updated CCLUB to include change (SOC) updates
- Updated the emission factors of criteria air pollutant (combustion and non-combustion emissions) for SMR

Research

- [Advanced Materials and Manufacturing](#)
- [Advanced Vehicle Technologies](#)
- [Buildings and Climate-Environment](#)
- [Energy, Power, and Decision Analytics](#)
- [Energy Systems Analysis](#)
- [Engines and Fuels](#)
- [Friction, Wear, and Lubrication Technologies](#)
- [Grid Modeling](#)

The VISION Model

What is VISION?
The VISION model has been developed to provide estimates of the potential energy use, oil use and carbon emission impacts of advanced light- and heavy-duty vehicle technologies and alternative fuels through the year 2050. Beginning in 2008, the analysis horizon has been extended to 2100. The model consists of two Excel workbooks: a Base Case of US highway fuel use and carbon emissions to 2050 (to 2100 in 2008 and newer versions) and a copy (of the Base Case) that can be modified to reflect alternative assumptions about advanced vehicle and alternative fuel market penetration.

Annual Updates
VISION news: 2017 Release

The Argonne National Laboratory Transportation Systems Assessment Group is pleased to announce the release of VISION 2017 model. The VISION model is updated annually. The Base Case in the most recent

VISION MODEL DOWNLOAD FORM
Fill in this form to download the VISION Model.

VISION DOCUMENTATION

- (New) VISION Model Description and User's Guide: Model Used to Estimate the Impacts of Highway Vehicle Technologies and Fuels on Energy Use and Carbon Emissions to 2100
- VISION Model: Description of Model Used to Estimate the Impact of Highway Vehicle Technologies and Fuels on Energy Use and Carbon Emissions to 2050
- VISION 2008 User's Guide

Who to talk to: Michael Wang and Joann Zhou (ANL)

What we think about when we cook dinner



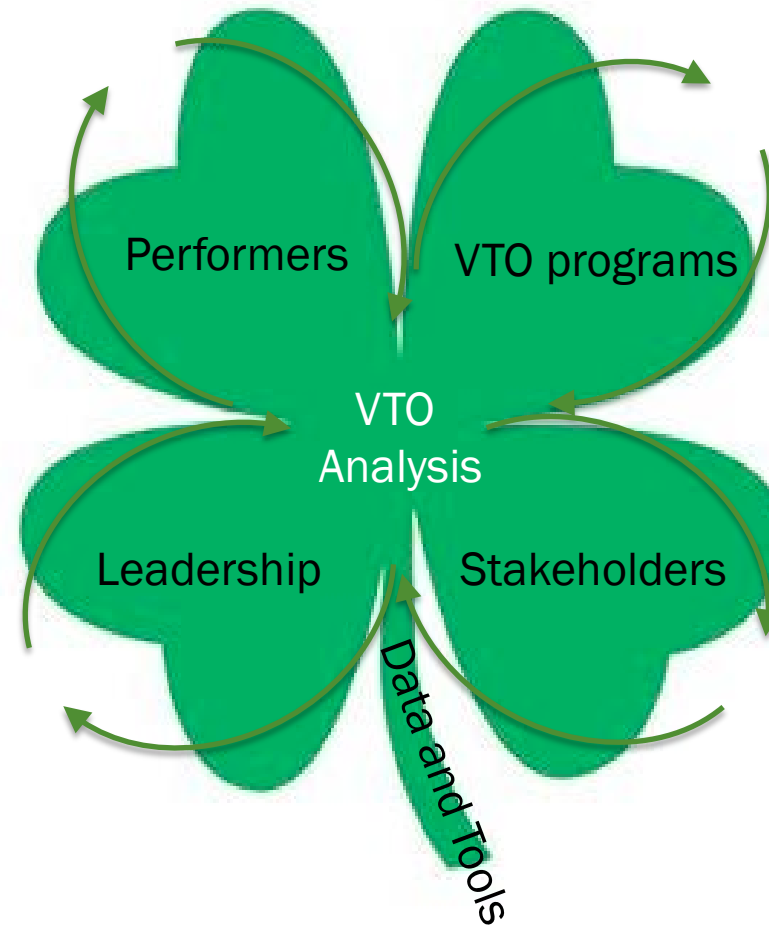
Who to talk to: Alicia Birky (Energetics)

What we think about when we brush our teeth before bed



Who to talk to: Jeff Gonder, Matteo Muratori, Eric Wood, and Aaron Brooker (NREL)

Purpose: Strengthen ties in transportation energy community



Welcome to the community! Come see more of us

FY 17 AMR Presentations	Presentation/Poster
Modeling Framework and Results to Inform Charging Infrastructure Investments	VAN026 (oral)
VTO Program Benefits Analysis	VAN018 (oral)
Electric Vehicle-Grid Analysis Benefits	VAN028 (oral)
ANL VTO Analysis Modeling Program	VAN017 (oral)
Assessing the Energy and Cost Impact of Advanced Technologies through Model-Based Design	VAN023 (oral)
Transportation Data Program: A Multi-Laboratory Coordinated Project	VAN016 (oral)
Transportation Energy Evolution Modeling (TEEM) Program	VAN021 (poster)

Analysis poster is on **Tuesday evening 5-7pm**

Analysis oral presentations are on **Thursday 8:30 am-noon Salon H**

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Thank you!

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